

and conditions, within 90 days of its preemption order.

(d) In arbitrating disputes because of a state's failure to act, the FCC shall:

- (1) Require the party seeking arbitration to file a petition with supporting information;
- (2) Allow the non-petitioning party or parties to respond;
- (3) Obtain additional information and discovery as it deems necessary;
- (4) Apply to the maximum extent practicable the rules and requirements of subsections 252(b)(4), (5) of the Telecommunications Act of 1996; and
- (5) Issue a decision resolving the arbitration based on full consideration of the record and the standards set forth in 252(c) of the Telecommunications Act of 1996.

(e) In reviewing an agreement or statement of general terms and conditions under this regulation, the FCC shall apply the relevant standards set forth in subsections 252(e)(2) and 252(f)(2) of the Telecommunications Act of 1996.

(f) Once the FCC has preempted a state because of a failure to act, the FCC shall retain jurisdiction over the relevant agreement or statement of general terms and conditions until: (i) the parties to the original agreement and any parties availing themselves of the agreement pursuant to subsection 252(i) of the Telecommunications Act of 1996 agree to terminate the agreement; or (ii) the Commission finds that it is no longer technically

feasible to make available the types of interconnection involved, or (iii) the Commission finds that the statement of general terms and conditions has been superseded by a more recently filed and approved statement of general terms and conditions.

****607 Availability of Agreements to
 Other Telecommunications Carriers -- §§ 269-72**

(a) Once an interconnection agreement is approved by a state commission or the FCC pursuant to section 252 of the Telecommunications Act of 1996, an incumbent local exchange carrier which is a party to the agreement has an obligation to make available upon the same terms and conditions to any requesting carrier any or all of the following parts of the agreement, and is bound to perform its obligations regarding such parts as if the requesting carrier were a party to the original approved agreement: (i) any portion of the agreement governed by individual subsections or paragraphs of section 251, or (ii) network elements.

(b) A telecommunications carrier requesting the availability and use of an agreement, or parts thereof, approved by a state or the FCC pursuant to section 252 of the Telecommunications Act of 1996, shall notify the relevant government authority.

(c) An incumbent local exchange carrier that is a party to an agreement approved pursuant to section 252 of the Telecommunications Act of 1996 shall be obligated to make it or any unbundled part pursuant to paragraph (a) above available to a

requesting carrier in any state in which the incumbent local exchange carrier provides telephone exchange service. A requesting carrier in such circumstances shall file the agreement or the relevant parts of the agreement with the state regulatory authority in the state in which the requesting carrier seeks to use the agreement.

(d) Once an interconnection agreement is approved by a state commission pursuant to section 252 of the Telecommunications Act of 1996, parties to the original agreement or parties to any subsequent agreement derived from such original agreement pursuant to subsection 252(i) of the Telecommunications Act of 1996 may mutually decide to terminate such agreement and shall notify the relevant government authority of such action; provided that, such termination shall not affect any other agreement that was derived from the original agreement. An approved interconnection agreement shall remain in effect until the relevant regulatory authority finds it is no longer technically feasible to continue providing the interconnection or unbundled network elements.

Subpart G

Penalties

****700 Penalties -- § 41**

(a) Upon a finding that a local exchange carrier has violated any of the regulations or any agreements or statements of general terms and conditions pursuant to sections 251 and 252

of the Communications Act of 1934, the Commission shall impose forfeiture penalties. The amount of forfeiture shall be the amount listed below multiplied by the annual revenues in the relevant geographic market of the violating local exchange carrier divided by the total annual local exchange revenues in the relevant geographic market:

- (1) \$100,000 for the first violation;
- (2) \$500,000 for each subsequent violation of the same regulation.

Upon a finding that any requesting telecommunications carrier has been injured by any violation of the regulations or an agreement or statement of general terms and conditions under Section 251 of the Telecommunications Act of 1934, (e.g. the failure to meet provisioning dates or quality of service standards) the Commission shall also require the violating carrier to place an announcement in a newspaper of general circulation in the relevant area explaining that any particular problems incurred by the end users caused by the violation or failure was attributable to the violating carrier's actions and not the actions of the injured carrier.

b) Upon a finding that a local exchange carrier has willfully and repeatedly violated any of the regulations or agreements or statements of general terms and conditions pursuant to sections 251 and 252 of the Communications Act of 1934, the Commission shall impose a forfeiture penalty of up to \$5,000,000 multiplied by the annual revenues in the relevant geographic

market of the violating local exchange carrier divided by the total annual local exchange revenues in the relevant geographic market. The Commission also shall conduct a proceeding to determine whether the actions of the carrier are sufficiently grave to indicate a violation of the public interest and a lack of fitness of such carrier to hold Commission awarded licenses or certificates. With respect to the Bell Operating Companies, the Commission shall consider whether the public interest requires the Commission to retract any permission that has been granted to the Bell Operating Company under Section 271 to provide intraLATA interexchange services.

(c) In conducting proceedings pursuant to this section, the Commission shall follow the procedures set forth in 47 C.F.R. Section 51.80 (d) through (h) provided that the Commission completes action on any allegation of a violation within 120 days of the initial filing.

SUBPART H

PROCEDURES FOR CONSIDERING SECTION 253 PETITIONS

****800 Petition Requirements and Deadlines**

(a) A petition alleging a violation of subsections 253(a) and (b) of the Communications Act of 1934 and seeking Commission remedial action pursuant to subsection 253(d) of the Communications Act of 1934 shall set forth clearly and concisely the interest of the petitioning party, the relevant state or

local government action, the specific provisions of the Communications Act of 1934 that are alleged to be violated, the rationale supporting the allegation of violation, and the precise relief sought.

(b) For any petition meeting the requirements of subsection (a), the Commission shall provide public notice and seek comment. The Commission shall complete action on the petition within 90 days of the filing date.

Competitive Pricing of
Interconnection, Unbundled Elements and Collocation
by
William Page Montgomery
for
The Association for Local Telecommunications Services
May 16, 1996

Summary

II. B. 2. d. Pricing of Interconnection, Collocation and Unbundled Network Elements

This paper describes how the Federal Communications Commission should establish detailed economic pricing guidelines to govern the pricing issues raised in the Notice, but should not prescribe specific rates at this time or utilize pricing surrogates such as interstate access rates. Pages 8-10.

(1) Commission's authority to set pricing principles

The paper concurs in the Commission's tentative conclusion that pricing guidelines should be set without regard to traditional jurisdictional practices, and notes that many states have resources which can be used to evaluate economic cost studies. Pages 2-3.

(2) Statutory language

The statutory language unambiguously embraces incremental cost tests, i.e., marginal costs and total service long run economic costs, for interconnection and unbundled network elements. Pages 6-8. The only other costs identified are those that can be specifically ascribed to universal service. Pages 24-25.

(3) Rate levels

(a) LRIC-based pricing methodologies

The Commission should adopt economic pricing standards and set forth at least six specific guidelines necessary to resolve empirical issues raised by LEC sponsored incremental cost proxy models. These guidelines may be best satisfied by more generic and accessible proxy cost models that are now being developed. Pages 10-19.

(b) Proxy based Outer Bounds for Reasonable Rates

"Proxy" methods that do not actually estimate the incumbent LECs' incremental cost functions are inferior and risk further institutionalization of

existing price distortions and should not be used. Pages 3, 6-7.

(c) Other Issues

All of the pricing issues discussed in section II. B. 2. d. of the Notice should be evaluated within a model projecting a comprehensive competitive market end state, which does not yet exist but which should provide the Commission with the correct evaluative framework. Pages 4-6.

(4) Rate Structure

If the Commission is able to set forth detailed qualitative guidelines for incremental costs, various stakeholders such as incumbent LECs, entrants and, in some circumstances, state regulators, can adapt pricing structure that reflect cost causation and match the needs of the marketplace. Rate structure prescriptions by the Commission are not needed. Page 4.

(5) Discrimination

Rigorous application of a comprehensive competitive model will prevent discriminatory treatment of local market entrants by defining appropriate levels of reasonable profit for incumbents, excluding recovery of common costs from prices for interconnection and unbundled network elements in accord with principles of economic efficiency and forbidding incumbent LECs from pricing services needed by competitive rivals to recover "legacy" costs unrelated to demonstrable, specific universal service requirements. Pages 20-26.

(6) Relationship to Existing State Regulation and Agreements

The approach set out in this paper will achieve a proper balance of the roles of state regulators and the Commission and will enhance the prospects for negotiation under the Act by obviating incumbent's LECs superior bargaining positions and inherently asymmetric access to information. Pages 3-4.

Competitive Pricing of Interconnection, Unbundled Elements and Collocation

Introduction

The Association for Local Telecommunications Services (ALTS) has asked me to address some of the issues raised in section II. B. 2. d. of the Notice of Proposed Rulemaking in CC Docket No. 96-98, concerning the pricing of incumbent telephone companies' facilities and services needed to enable local competition.¹ The facilities and services are described in the Telecommunications Act of 1996's provisions governing interconnection, collocation and unbundled network elements ("ICU" pricing for simplicity). The principal purpose of my paper is to outline a competitive model within which ICU pricing issues can be addressed, to describe the advantages and disadvantages of using existing incremental cost study methods to set ICU prices, and to set out some relatively detailed qualitative guidelines which the Commission should adopt in order to define economically efficient ICU pricing.

For approximately the last two years, I have been analyzing similar issues in several state regulatory proceedings involving local competitive entry. I have prepared formal testimony or analyses concerning competitive interconnection issues in fifteen states during that period. I also have nearly 22 years experience in both state and FCC policy and ratemaking matters. I have been a consultant for over 75 FCC tariff and ratemaking matters and many state telecommunications regulatory proceedings. At the state level, I have examined the proprietary cost studies of most major local exchange carriers under nondisclosure agreements. My level of experience at both jurisdictional levels is somewhat atypical. It provides a good perspective on both the

¹ Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Notice of Proposed Rulemaking, CC Docket No. 96-98, April 19, 1996 (the Notice).

strengths and weakness of federal and state telecommunication regulation.

I have used this perspective to consider the two basic tradeoffs that are themes in the Notice's discussion of pricing issues for interconnection, collocation and unbundling.² The first tradeoff concerns the degree of prescription in the Commission's rules. The Notice considers whether to devise rules that will lead to specific numerical rates using some of the existing interstate rate setting rules, versus using methods based upon economic costs. The second broad tradeoff involves the relationship between Commission rules and the existing or future regulatory efforts of state commissions. This dimension involves the extent to which local competition will be facilitated by national pricing standards and the possibility of adopting rules based upon one or a combination of existing state practices.

Both of these inherent policy tradeoffs offer the Commission the opportunity to develop new paradigms with respect to both telecommunications pricing standards and federal-state relations. The creation of these opportunities is perhaps the main contribution to common carrier regulatory reform by the Telecommunications Act of 1996, beyond the Act's clear endorsement of vigorous competition in all telecommunications markets. If the Commission fails to seize this opportunity within the narrow time window offered by the Act, existing practices will simply become more deeply institutionalized than ever. In contrast, virtually every major Commission policy initiative of the last twenty years — the computer inquiry rules, access charges,

² Most of the following discussion pertains primarily to pricing of local network interconnection and unbundled network elements. The pricing of physical collocation raises similar issues, although physical collocation pricing is likely to be affected by other factors such as the availability of space and arrangements among local carriers for sharing space.

open network architecture and price caps, for example — necessarily has started from and been built upon a status quo ante.³

As part of this paradigm, the Commission should adopt an economic pricing standard rather than rate rules based upon existing prices in either jurisdiction. The Commission is correct that a well-defined incremental cost standard is clearly preferred by economic theory, in spite of the implementation difficulties associated with identifying economic costs.⁴ The phrase in section 252(d) that costs be "determined without reference to a rate-of-return or other rate-based proceeding" regarding prices for unbundled network elements could not be more evocative of Congress' intention to turn away from regulatory forms of the past. Likewise, the "added costs" language regarding network interconnections suggests economic pricing at the level of true marginal costs .

The alternatives to economic pricing set out in the Notice would bypass this unique opportunity. Utilization of some subset of existing access charges would merely perpetuate existing interstate rate anomalies.⁵ Likewise, the Commission's specification of explicit numerical rate ceilings or an outer bound of rate levels,⁶ in the accelerated time required by the Act, would almost

³ The opportunity to start with correct pricing standards for local ICU services is unique because in almost all areas of the country, entrants will start with near zero market shares. The adverse financial effects upon incumbents that might have to be considered if there were immediate economic pricing of services such as interstate access have not yet arisen with local ICU services, because the incumbents have not yet incorporated revenue streams derived from uneconomic pricing of ICU services.

⁴ Notice, paragraph 124.

⁵ See Notice, paragraphs 139-141.

⁶ Notice, paragraph 134.

certainly rely to some extent on existing pricing practices.

In using the economic cost standard, however, the Commission should not adopt specific rates. The Commission should instead adopt detailed qualitative guidelines for the economic cost studies that address and resolve some of the serious empirical issues in economic cost studies. Most of these issues are rooted in the incumbent LECs' vastly superior access to internal cost and demand information, relative to either regulators or competitive entrants.

Detailed empirical cost guidelines will be an important component in achieving the right balance between federal and state regulatory responsibilities under the Act. The Commission is correct that competitive ICU rates should not be explicitly subject to jurisdictional separations, consistent with the federal Act's focus on national competition.⁷ Trying to develop competitive ICU rates within the traditional jurisdictional framework would almost certainly require reference to the Commission's existing Part 36 rules, which virtually all industry stakeholders agree are archaic and distorting. On the other hand, most state regulatory agencies have resources, local knowledge and expertise in cost analysis which will be invaluable to the development of competitive telecommunications markets. The Commission should seek to obtain the best possible leverage of the capabilities of state agencies and conserve its resources for any matters that a specific state may not be able to resolve. The leveraged use of federal and state resources will also provide the appropriate consideration for the Act's provisions regarding inter-carrier negotiations, because the federal guidelines can alleviate the inherently unequal bargaining

⁷ Notice, paragraph 120. The Notice also discusses the rationale for treating unbundled network elements without regard to jurisdictional utilization at paragraphs 77 and 84 and elsewhere.

power that exists between incumbent LECs and local service entrants.

If this Commission is able to specify appropriate guidelines for economic costs, then the individual states, incumbent LECs and market entrants should be able to formulate various pricing structures that conform to the structure, and permit recovery, of the appropriate costs. Many of the more detailed rate structure issues highlighted at paragraphs 149-155 of the Notice may be resolved locally.

The competitive model

Developing appropriate ICU prices first requires that the Commission consider a feasible end state of a fully competitive telecommunications market in the United States. The Commission should start with the conception of a fully and effectively competitive market and then devise policies that replicate those conditions. That such conditions do not exist today in local telecommunications is irrelevant, because the objective is to outline policies that most closely emulate this competitive state. The Telecommunications Act clearly demands this consideration, both in its overall endorsement of competitive policies and in its numerous references to economic pricing.

The outlines of a fully competitive telecommunications market are easily drawn. Most telecommunications technology involves potentially significant "spare" capacity in the sense that outputs can be increased over a range of fixed inputs with small marginal additions of capital, like adding line cards to digital switching platforms or activating more communications channels. In the competitive model, there would be multiple providers of both inputs and potential outputs, and no single firm would be capable of exercising market

power except through its own innovation and marketing efforts. The competing firms would have natural incentives to try to exploit their own "spare" capacity in order to maximize profits. Therefore, most of the firms would seek to provide their outputs on both a wholesale and retail basis.⁸

Thus, the Commission's pricing guidelines should be framed to match the result achieved by a long run end state in which the prices and conditions for all intermediate and final products and services — offered by both local service incumbents and entrants — are constrained by readily available competitive substitutes. In other words, while the Commission is correct that many interconnection and unbundled network elements are critical to the success of competition, and collocation also facilitates entry, the ICU pricing rules should be devised as if there were already full competition for these elements as well as for the services provided to retail customers.

Appropriate pricing of interconnection and other ICU elements should seek to provide a valid test of whether the incumbent LEC, and the entrants, are providing local telecommunications services in the most efficient manner. If the services are provided efficiently, consumer benefits are maximized. Aggregate economic efficiency, however, requires both that a firm adopt an efficient direct production function, as represented by its economic costs of production, and that it minimize other costs such as its joint and common costs. The individual firm whose costs are lower than the average costs reflected in a

⁸ Throughout this paper I use the term "wholesale" to mean the transfer of goods, services and facilities between firms for use as inputs to or components of goods and services offered to ultimate consumers. These intermediate goods are not confined to incumbent LECs' existing retail services that may be discounted and offered for resale under the provisions of the Telecommunications Act that explicitly address telecommunications resale.

market clearing price will prosper. It may be able to reduce prices to increase its market share, use its cost advantage for growth or diversification, or leverage its advantage in other ways. The firm with higher than average costs must reduce them, accelerate innovation or, perhaps, exit the market.

Definitions of "economic costs"

Only ICU prices based upon a well-defined conception of incremental costs offer the possibility of replicating the competitive end state in telecommunications before it has actually arrived. Competitive pricing of unbundled network elements can be accomplished under the sort of comprehensive cost model framework labeled "total service long run economic costs" (TSLRIC). The staff of the Arizona Corporation Commission use the most straightforward definition of TSLRIC costs that I have seen: "The cost to provide a total quantity of a service given that the company provides all of its other services."⁹ However, while some high level agreement exists with respect to the general definition of TSLRIC, any cost model that attempts to estimate costs raises empirical issues. These issues must be addressed by the Commission.

The Notice discusses LRIC-based cost methods in one subsection,¹⁰ but discusses so-called "proxy" cost models separately.¹¹ The Notice discusses proxy cost models in conjunction with options such as using rate ceilings, adopting some of the existing access charge rate elements, or deriving rates based upon

⁹ Arizona Corporation Commission, In the Matter of Rules for Telecommunications Interconnection and Unbundling, Docket No. R-0000-96-001, proposed rules, January 1996. These rules likely will have been adopted by May 16, 1996.

¹⁰ Notice at paragraphs 126-133.

¹¹ Id., paragraphs 136-137.

traditional LEC interconnection arrangements.¹² This differentiation is not correct. All incremental cost study methods are "proxies" for a firm's costs. Different proxy models may be distinguished in terms of complexity, accuracy, intensity of their information requirements and accessibility. Internal LEC TSLRIC models, which I have spent hundreds of hours analyzing, are complex and informationally demanding and may be relatively inaccessible. But all cost models are truly proxies. Recent efforts have concentrated on creating models that are less complex and more accessible for analysis.¹³ There is no evidence that these more generic proxy models are less accurate in estimating costs than previous LEC-developed models.

"Working groups" in various states have developed so-called consensus principles for TSLRIC studies concurred in by various competing stakeholders.¹⁴ These consensus principles are woefully insufficient for Commission cost guidelines, however. The "principles" are so general there is little wonder that competitors have agreed on them.¹⁵ The "consensus" costing principles

¹² Id., paragraphs 138-143.

¹³ See Hatfield Associates, Inc. "The Cost of Basic Network Elements: Theory, Modeling and Policy Implications," for MCI Telecommunications, March 1996.

¹⁴ In 1995, competing service providers in Arizona developed a list of principles for implementing TSLRIC. These principles are almost identical to an earlier set published by the Michigan Public Service Commission, "1994 Report to the Governor and the Legislature as Required by 1991 Public Act 179: The Impact of Public Act 179 on Telecommunications Service Providers and Customers," October 1993, p. 48. A similar definition has been incorporated in some state competition laws. See e.g. Utah Telecommunications Reform Act (1995) Utah Code Annotated 1953, as amended by HB 364 section 54-8b-2(13).

¹⁵ Examples include: "Cost causation is a key concept in incremental costing;" "The increment of demand studied should be the entire quantity of the service provided, not some small increase in demand;" "Costs shall be forward looking;" "Any function necessary to produce a service must have an associated cost; and "The same methodology all apply to all services, new and existing, regulated or non-regulated, etc."

developed in different states do not address the empirical issues that have the largest potential quantitative impact on TSLRIC cost results. On the other hand, surrogate methods like matching ICU prices to existing rate elements are not "proxies" because these methods do not attempt to ascertain the cost function independently. As I noted above, the Commission's adoption of any such surrogate methodology would likely cause it to forego the one-time opportunity to develop guidelines under which the competitive model could be achieved, and would create simply another version of institutionalized pricing distortions.

The Notice clearly expresses the Commission's tentative belief that it has a unique role with respect to enabling local competitors to avoid diseconomies in production that arise solely because of differences among various state practices.¹⁶ Notwithstanding the similarity of the "consensus" principles in many states, the incremental cost study methods actually used by different multi-state LECs still exhibit substantive variations which are inconsistent with any national standards for competitive pricing.¹⁷ Thus, the Commission's tentative conclusion

The consensus principles seem to be an example of re-fighting the last war. Most of the principles address limitations in LEC LRIC study methods in use several years ago, which prevented the incremental costs of different services from being directly compared, because the various individual LRIC studies used different assumptions or time periods.

¹⁶ See e.g., Notice, paragraphs 68, 75, 79-80, 94-95, and 120.

¹⁷ For example, incremental costs calculated by Ameritech in Illinois are subjected to "aggregate revenue tests" to check the consistency of the cost results across many services. Ameritech's Illinois cost studies also specify about 20 joint cost allocators, which are clearly separated between different service types (e.g., dedicated, switched toll, etc.) and products lines (e.g., residence versus business local products). Incremental costs calculated by NYNEX in Massachusetts represent relatively shorter-run marginal costs than those specified by the broad definition of TSLRIC. BellSouth appears not to calculate incremental costs for all services in all its states at this time. US West Communications has utilized an incremental methodology that produces both direct cost estimates and a significantly higher "incremental" cost that reflects broad average allocations of "shared and residual" costs reminiscent of fully distributed costing.

is correct that more national uniformity in ICU pricing standards is desirable, particularly if the Commission's guidelines still allow state regulators with the resources to engage in the quantitative analysis of LEC-specific prices to continue to exercise those resources.

Incremental cost guidelines

In the remainder of this paper, I discuss four areas that the Commission needs to address if it is to provide the proper direction for ICU pricing. First, Commission guidelines should specify how ICU cost studies address six empirical or mechanical issues that arise with incremental cost studies. A number of these issues pertain to the relationships between direct costs and various costs that may be labeled "joint" in various cost studies. "Joint costs" must be carefully differentiated among costs that are joint because of the properties of telecommunications technology, versus any costs deemed to be "joint" by incumbent LECs that represent marketing and other retail costs, capacity placed in excess of current requirements in order to enable future services, and residual embedded costs.

Second, the Commission must define the "reasonable profit" that may be added to the appropriate direct and joint costs for unbundled network elements under section 252(d). Incremental cost studies based upon proxy models incorporate the reasonable profit that a firm under effective competition could expect to receive from using the resources subject to the studies. The profit includes a forward looking cost of capital consisting of the firm's market rates for obtaining money in capital markets, capital recovery charges and the income tax effects associated with the return on and recovery of capital.

Third, the competitive outcome requires that many costs considered to be "common" costs of incumbent LECs be excluded from the ICU prices.¹⁸ Intermediate goods such as ICU rates generally should not include common costs, in order to ensure that competition is economically efficient.

Fourth, prices for interconnection and unbundled network elements should not be marked up to recover incumbent LEC's so-called "legacy" costs. If an incumbent can demonstrate that such costs were incurred because of a universal service obligation, i.e., if the costs would not have been expended by a competitive firm, they should be recovered from an appropriate, competitively neutral universal service mechanism, as contemplated in section 254 of the Act. Sunk costs that would have been incurred by a competitive firm because a geographic area or customer class provided satisfactory cash flows are not recoverable either through ICU prices or universal service funding.

Empirical requirements

At least six empirical issues should be addressed as part of any Commission policy that seeks to create greater national uniformity in competitive pricing and local market opportunities:

- *First*, any so-called "scorched network" assumptions must be applied consistently across all network functions with respect to an incumbent

¹⁸ No regulatory decision involving local competition to date has adopted this treatment of "joint and common" costs or examined these issues. Even combining the terms "joint" and "common" suggests the absence of clear analysis of these terms, because joint costs may be distinguished from common costs in some cases. Today, the conventional wisdom is to simply ascribe a cost markup for "joint and common" costs without duly considering economic efficiency criteria, as the Notice itself suggests. See Notice, paragraph 127.

LEC's ICU elements; it is not correct to assume rebuild conditions in one part of the network when other parts like switching nodes are analyzed only "in place."

- *Second*, spare network capacity should be completely segmented among four different conditions that create spare capacity and attributed to ICU elements only on a cost causative basis.
- *Third*, related to the first two issues, the network engineering assumptions used to develop direct TSLRIC costs should conform to the types of services for which local market entrants will compete using the ICU elements.
- *Fourth*, the TSLRIC cost studies should be able to identify all costs that will be avoided when ICU elements are provided to competing carriers.¹⁹
- *Fifth*, "joint" costs should be segmented from "common" costs and joint costs should be attributed to ICU elements only when the incumbent LEC can demonstrate that the joint cost condition arises from the technology used to provide the elements. Costs simply labeled "residual" or by identified other non-specific terminology should not be used in these studies.
- *Sixth*, the inputs and outputs from the TSLRIC study should be accessible for purposes of replicating the study methods, performing sensitivity studies and comparisons to other public data.

Each of these empirical guidelines, and perhaps others as well, is necessary in order to prevent incumbent LECs from exploiting superior information about their

¹⁹ The economic cost tests identified for interconnection and unbundled network elements in the Telecommunications Act [sections 252(d) (1) and (d) (2) (A) and (B)] inherently require that incumbent LECs identify such avoided costs in the "bottom-up" cost studies for these elements, even though these avoided costs may differ from the "top down" cost avoidances referenced in the Act with respect to resale rates [section 252(d) (2) (C)].

network cost functions, anticipated demands and strategies for introducing advanced services to extract an information rent from the pricing of ICU elements. Overall, application of these guidelines likely will lead to increased use of what the Notice refers to as "proxy" cost models — which in reality are models which are not specific to individual LECs, nor subject to the strategic use of information that an individual LEC uniquely controls.

Direct TSLRIC costs must apply any so-called "scorched network" assumptions consistently. A scorched network cost methodology attempts to estimate incremental costs incurred if the provider were to utilize only the most efficient overall network architecture dictated by current telecommunications technology. This network configuration would be very different from incumbent LECs' embedded network architectures. Proprietary studies by a few incumbent LECs suggest that such a network would require 30% to 45% fewer switching centers. The provider would make much more use of fiber optics rings in order to substitute extremely low cost transport for some switching nodes.²⁰ The incremental costs of such a network would be lower than the costs estimated using existing switch node locations, but the "scorched network" assumptions would introduce additional factors that would be difficult to replicate. Accordingly, most existing studies do not assume displacement of switching nodes.

This approach illustrates the tension among some of the "consensus" costing principles, one of which states that "Long run implies a period long

²⁰ The decline of transport costs is such a pronounced trend that The Economist's annual survey of telecommunications (which was entitled "The Death of Distance") noted that, "The death of distance as a determinant of the cost of communications will probably be the single most important economic force shaping society in the first half of the next century." September 30, 1995, Survey, p. 1.

enough that all costs are avoidable." Another principle, however, states that "The technology used in the study should be the least cost, most efficient technology currently available, based upon the existing or planned location of switching and outside plant facilities." These two principles are not fully reconcilable. The time period in which all costs were truly variable would encompass actual displacement of embedded switching nodes.

This inconsistency is carried over in most LEC TSLRIC studies to the assumptions concerning the engineering and costs associated with loop plant. Loop plant engineering design assumptions in existing LEC studies are not consistent with the in-place network assumptions. The studies typically assume that new structures (poles, conduit) are placed so as to provide the capacity for additional access lines. In the loop plant assumptions, the network is assumed to be "scorched." The assumed loop plant designs may include capacity for future services. Loop costs can reflect inconsistent specific assumptions, such as attributing the costs of provisioning for multiple access lines to a single loop or incorporating functions that are deregulated, like complex building wiring. These assumptions add costs to the last mile that is critical for competitors' access through the unbundled network loops and other elements.

The LEC methods can create a distorted sort of "ramsey-costing" in which the economic cost estimates themselves are varied according to the provider's strategic goals, rather than by demand factors affecting the price to marginal cost relationships. Of course, "ramsey-costing" is not Ramsey pricing, because the LEC's strategic objectives are built into the very cost themselves, not independently observable has departures from marginal costs. Therefore, the Commission's guidelines should specify that a practical decision not to apply scorched network assumptions to one cost center must be carried over

consistently to all cost centers. With respect to any loop plant, distribution or feeder, the "existing network" assumption should relate to the most current technology, and best engineering practices. The costs should not assume full rebuilds of distribution plant supporting structures, a costly and labor intensive activity. The demand growth assumed in the long run time period should not anticipate stochastic demand increases for functionalities that are not part of the ICU elements, such as broadband, video capable systems. The distribution network should be established only for demand growth, not displacement.

Spare network capacity should be completely segmented and attributed only on a cost causative basis. Current LEC cost studies utilize a variety of terms for the different types of spare capacity that may exist within an efficiently-designed network. Currently, many of these terms have a subjective, normative quality, like the "optimum fill factor" or the "ultimate fill" and so on. Different fill factors may be applied sequentially; that is, a basic spare capacity increment is included in the direct TSLRIC value while costs to recover other types of spare capacity are averaged into the indirect joint or shared costs. Many outside analysts in state proceedings have found these variants in treatments of spare capacity confusing and difficult to reconcile. Commission guidelines should require that incumbent LEC ICU pricing studies adopt fixed, non-normative definitions of spare capacity.

Four such separate definitions should be required. "Administrative spare" is plant engineered to supply immediate substitutes for facilities in use in the event of failures or other unanticipated events; "growth spare" includes plant placed in anticipation of reasonably likely non-stochastic increases in demand for current services. These two components satisfy the simple definition of TSLRIC costs ("The cost to provide a total quantity of a service given that the company

provides all of its other services").

Two other types of spare capacity do not satisfy the simple definition: "Modularity spare," which is the excess capacity incurred because facilities and technology is available only in predetermined capacity increments that will not match even anticipated demand, and "strategic spare." Current and prospective network technologies commonly create capacity which may be considerably in excess of that needed to actually provision the services to customers in a particular geographic area. This technology capacity results in a widening between the breakpoints of the most efficiently sized units, and is a function of the architecture of the systems themselves rather than any causation by the group of services or customers in a given area. Therefore, "modularity spare" is an inherent part of the overall connectivity of the network and as such should not be assigned merely to the particular customer class served by it or the geographic area where the capacity is or will be located. The architecture of the equipment and systems is also affected by long run strategic plans. It is particularly important to define the increment of strategic spare capacity, in order to differentiate costs voluntarily incurred by the incumbent LEC's management for future lines of business or services. These costs have no causal relationship to the current set of ICU or end user services, and should be excluded from TSLRIC costs. These two types of spare capacity should be distinguished from capacity that is put in place to serve expected future growth or to fulfill administrative requirements of the service provider.

Network engineering assumptions for direct TSLRIC costs should conform to the ICU functions being offered. I noted above that the simplistic consensus principle that "long run implies a period long enough that all costs are avoidable" is hard to reconcile with the actual operative assumptions in

most LEC TSLRIC models. One way to cure these conflicts is to adopt a more theoretically correct "scorched network" assumption to comport with the true long run. Another solution mentioned in the Notice might be for the Commission to adopt rate guidelines based upon short run marginal costs, and leave variations from the rates to co-carrier negotiations.²¹ The practical compromise is to restate the principle to encompass a period long enough that all specifically causal costs of the service are avoidable.

The cost standard should specify a time period long enough that the direct TSLRIC costs of the particular ICU services are variable, rather than the longer "scorched network" rebuild period or short run marginal costs. Incumbent LECs will rarely, if ever, be required to build all new facilities simply to provide ICU elements to their local competitors. Interconnections will be made at some point in the incumbents' generally ubiquitous networks. If the incumbent LEC has not extended facilities to serve a new area such as an office park or residential subdivision, it generally will not be required to do so merely to provide ICU elements; competitive entrants can build new facilities themselves where no facilities currently exist. Similarly, incumbents will not be required to build more specialized types of facilities to provide non-standard forms of unbundled elements. Unbundling has to date and will continue to apply to basic analog and digital facilities that are already widely deployed by incumbents, including 2-wire, 4-wire loop functionality, basic and primary rate ISDN facilities, and the incumbents' existing signaling, support and ancillary functions like E 9-1-1.

Therefore, the Commission's guidelines should require that TSLRIC studies

²¹ Notice, paragraph 132.